



**SUPPLEMENTARY Figure 1:** Example mapping of a healing tendon after 1 week, showing the maps of the different parameters that were quantified. Intrafibrillar order (AU), D-spacing (nm) and FWHM (nm) are determined from the 3<sup>rd</sup> order peak. Orientation (degree), degree of orientation (AU) and anisotropy (degrees) are the orientational parameters.